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EXAMINER

MOORE JR, MICHAEL J

ART UNIT PAPER NUMBER

2666

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/599,040

Applicant(s)

COOPER ET AL.

Examiner

Michael J. Moore, Jr.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 30-37 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 19, 20, 22-25 and 27-29 is/are rejected.
- 7) ☒ Claim(s) 18, 21 and 26 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/21/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 12/21/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement.

Election/Restrictions

In response to Applicant's response to restriction requirement submitted on 10/29/2004, claims **1-29** have been elected for prosecution. Therefore, claims **30-37** have been withdrawn from further consideration. Applicant is requested to cancel non-elected claims **30-37**.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

2. Claims **1, 9, 12, 17, 19, 25, and 29** are objected to because of the following informalities:

Regarding claim **1**, on line 13, the word "are" is needed between words "field" and "encapsulated".

Regarding claim **9**, on line 3, the word "the" is needed between words "for" and "first".

Regarding claim **12**, on line 3, the word "the" is needed between words "for" and "second".

Regarding claim **17**, on line 3, the word "have" should be "having".

Regarding claim **19**, on lines 6-7, the phrase "further comprises" is typed twice.

Regarding claim **25**, on line 3, the word "have" should be "having".

Regarding claim **29**, on line 2, the word "byes" should be "byte".

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims **1-15** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims **1-15** are directed to functional descriptive material *per se* (a frame signal, data structure) and are thus non-statutory. See MPEP 2106.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims **1, 6, 7, 15, and 16** are rejected under 35 U.S.C. 102(e) as being anticipated by Dutta (U.S. 5,982,761). Dutta teaches all of the limitations of the listed claims with the reasoning that follows.

Regarding claim **1**, “a frame signal for communicating payloads of data in a time division multiplexed frame stream” is anticipated by the hyperframe composed of superframes 230 and 235 as spoken of on column 16, lines 49-58. “A first header field including a first frame type field” is anticipated by long bulletin board field 217 shown in the hyperframe of Figure 6e that indicates the frame type A of Figure 6b. “A first payload field” is anticipated by frame type A data field 218 as shown in Figures 6b and 6e. “A second header field smaller than the first header field and including a second frame type field” is anticipated by short bulletin board field 221 shown in the hyperframe of Figure 6e that indicates the frame type B of Figure 6c. The short bulletin board field 221 is a smaller field than the long bulletin board field 217 in that the SBB 221 omits certain information that is present in the LBB 217 as spoken of on column 15, lines 38-45. “A second payload field” is anticipated by frame type C data field 226 shown in Figures 6d and 6e. Lastly, “wherein the first payload field, first header field, second payload field, and the second header field encapsulated in a single frame” is anticipated by the hyperframe shown in Figure 6e.

Regarding claim **6**, “wherein the first payload field carries first data scrambled by a pseudorandom noise scrambling sequence” is anticipated by the scrambling of data by scrambler 192 of Figure 3.

Regarding claim 7, “wherein the second payload field carries second data scrambled by a pseudorandom noise scrambling sequence” is anticipated by the scrambling of data by scrambler 192 of Figure 3.

Regarding claim 15, “at least one additional header field and at least one additional payload field, the at least one additional header field smaller than the first header field” is anticipated by RSDP field 216 (header) of frame type C of Figure 6d as well as frame type C data field 226 shown in Figures 6d and 6e.

Regarding claim 16, “transmitting a first header field including a first frame type field” is anticipated by the communication shown in Figure 1 as well as long bulletin board field 217 shown in the hyperframe of Figure 6e that indicates the frame type A of Figure 6b. “Transmitting a first payload field” is anticipated by the communication shown in Figure 1 as well as frame type A data field 218 (first payload field) as shown in Figures 6b and 6e. “Transmitting a second header field smaller than the first header field and including a second frame type field” is anticipated by the communication shown in Figure 1 as well as short bulletin board field 221 shown in the hyperframe of Figure 6e that indicates the frame type B of Figure 6c. The short bulletin board field 221 is a smaller field than the long bulletin board field 217 in that the SBB 221 omits certain information that is present in the LBB 217 as spoken of on column 15, lines 38-45. “Transmitting a second payload field” is anticipated by the communication shown in Figure 1 as well as frame type C data field 226 (second payload field) shown in Figures 6d and 6e. Lastly, “the first payload field, first header field, second payload field, and

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the second header field encapsulated in a single frame" is anticipated by the hyperframe shown in Figure 6e.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims **2 and 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dutta (U.S. 5,982,761) in view of Applicant's admitted prior art (background section of the specification).

Regarding claim **2**, Dutta teaches the frame signal of claim **1**. Dutta does not explicitly teach a first header field including a hopping beam guard band. However, Applicant discloses on page 1, lines 16-20 that TDM frames generally include an overhead section that includes a guard band. At the time of the invention, it would have

been obvious to someone skilled in the art to use a guard band with the teachings of Dutta in order to regulate the beam hopping between geographic areas.

Regarding claim **17**, Dutta teaches the method of claim **16**. Dutta does not explicitly teach a first header field including a hopping beam guard band. However, Applicant discloses on page 1, lines 16-20 that TDM frames generally include an overhead section that includes a guard band. At the time of the invention, it would have been obvious to someone skilled in the art to use a guard band with the teachings of Dutta in order to regulate the beam hopping between geographic areas.

9. Claims **3, 4, 8, 9, 11, 12, 14, 19, 20, 22-24, and 27-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Dutta (U.S. 5,982,761) in view of Boyden (U.S. 6,430,394).

Regarding claim **3**, Dutta teaches the frame signal of claim **1**. Dutta fails to teach where the first header field includes a first pseudorandom noise synchronization field. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a phasing sequence indication (PN) field 32 that is used by OQPSK demodulator 40 for synchronization as spoken of on column 6, lines 19-24. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the PN field of Boyden with the teachings of Dutta in order to provide uplink and downlink synchronization as shown in Figure 3 of Boyden.

Regarding claim **4**, Dutta teaches the frame signal of claim **1**. Dutta fails to teach where the second header field includes a second pseudorandom noise synchronization field. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a phasing sequence indication (PN) field 32 that is used by OQPSK demodulator 40 for synchronization as spoken of on column 6, lines 19-24. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the PN field of Boyden with the teachings of Dutta in order to provide uplink and downlink synchronization as shown in Figure 3 of Boyden.

Regarding claims **8 and 9**, Dutta teaches the frame signal of claim **1**. Dutta fails to teach a first frame type field that carries a coding identifier specifying heavy or light coding. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a coding rate (CR) field 36 (coding identifier) that is used to indicate heavy or light encoding as spoken of on column 6, lines 32-39. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the CR field of Boyden with the teachings of Dutta in order to provide an indication of whether light FEC decoding or heavy FEC decoding is required at the terminal as spoken of on column 6, lines 37-39 of Boyden.

Regarding claims **11 and 12**, Dutta teaches the frame signal of claim **1**. Dutta fails to teach a second frame type field that carries a coding identifier specifying heavy

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or light coding. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a coding rate (CR) field 36 (coding identifier) that is used to indicate heavy or light encoding as spoken of on column 6, lines 32-39. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the CR field of Boyden with the teachings of Dutta in order to provide an indication of whether light FEC decoding or heavy FEC decoding is required at the terminal as spoken of on column 6, lines 37-39 of Boyden.

Regarding claim **14**, Dutta teaches the frame signal of claim **1**. Dutta fails to teach a masterframe count field, and a subframe count field. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a frame count (FC) field 34. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the FC field of Boyden with the teachings of Dutta in order to provide a way to delineate uplink frame boundaries needed to locate assigned uplink time slots as spoken of on column 7, lines 25-28 of Boyden.

Regarding claims **19 and 20**, Dutta teaches the method of claim **16**. Dutta fails to teach the transmission of a first payload coding identifier and a second payload coding identifier each indicating a heavy or light coding. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a coding rate (CR) field 36 (coding identifier) that is used to indicate heavy or light encoding as spoken of on column 6, lines 32-39. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have

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been obvious to someone skilled in the art given these references to use the CR field of Boyden with the teachings of Dutta in order to provide an indication of whether light FEC decoding or heavy FEC decoding is required at the terminal as spoken of on column 6, lines 37-39 of Boyden.

Regarding claim **22**, Dutta teaches satellite protocol processor 180 (downlink frame processing module) in Figure 2. Dutta also teaches convolutional encoder 193 within the TDM modulator 191 of Figure 3. Dutta also teaches frame formatter subsystem 184 (downlink frame organizer) in Figure 2 that assembles the frames of information to be transmitted over the TDM forward channel 161. Dutta also teaches long bulletin board field 217 (first header field) shown in the hyperframe of Figure 6e that indicates the frame type A of Figure 6b. Dutta also teaches frame type A data field 218 (first payload field) as shown in Figures 6b and 6e. Dutta also teaches short bulletin board field 221 (second header field) shown in the hyperframe of Figure 6e that indicates the frame type B of Figure 6c. The short bulletin board field 221 is a smaller field than the long bulletin board field 217 in that the SBB 221 omits certain information that is present in the LBB 217 as spoken of on column 15, lines 38-45. Dutta also teaches frame type C data field 226 (second payload field) shown in Figures 6d and 6e.

Dutta fails to explicitly teach an outer coder and an inner coder coupled to the outer coder where the inner coder includes a coded data output. However, Boyden teaches an adaptive processor 124 that contains an inner and outer coder in Figure 5. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been

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obvious to someone skilled in the art given these references to use the inner and outer coding of Boyden with the teachings of Dutta in order to provide a way to regulate the coding used based on the power level of the terminal as spoken of on column 4, lines 48-65 of Boyden.

Regarding claim **23**, Dutta further teaches a scrambler 192 coupled to encoder 193 of TDM modulator 191 of Figure 3.

Regarding claim **24**, Dutta teaches convolutional encoder 193 within the TDM modulator 191 of Figure 3. Dutta fails to teach a Reed-Solomon encoder (outer coder) and a Convolutional encoder as an inner coder. However, Boyden teaches an adaptive processor 124 that contains an inner block coder (Reed-Solomon) and FEC outer coder (convolutional) in Figure 5. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the inner and outer coding of Boyden with the teachings of Dutta in order to provide a way to regulate the coding used based on the power level of the terminal as spoken of on column 4, lines 48-65 of Boyden.

Regarding claim **27**, Dutta fails a first payload field type indicator including a coding identifier. However, Boyden teaches a data symbol block 30 in Figure 3 that contains a coding rate (CR) field 36 (coding identifier) that is used to indicate heavy or light encoding as spoken of on column 6, lines 32-39. Dutta and Boyden are considered to be analogous art in that they are both concerned with TDM satellite communication. At the time of the invention, it would have been obvious to someone

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skilled in the art given these references to use the CR field of Boyden with the teachings of Dutta in order to provide an indication of whether light FEC decoding or heavy FEC decoding is required at the terminal as spoken of on column 6, lines 37-39 of Boyden.

Regarding claim **28**, Dutta fails to teach a data memory coupled to the outer coder. However, Boyden teaches a downlink buffer 126 coupled to the outer coder of adaptive processor 124 of Figure 5. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the downlink buffer of Boyden with the teachings of Dutta in order to provide a means for assembling encoded cell blocks for scheduling as spoken of on column 10, lines 52-55 of Boyden.

Regarding claim **29**, Dutta fails to teach where the data memory stores 53 byte ATM cells. However, Boyden teaches a downlink buffer 126 coupled to the outer coder of adaptive processor 124 of Figure 5 that receives encoded ATM cells as spoken of on column 10, lines 41-55. At the time of the invention, it would have been obvious to someone skilled in the art given these references to use the downlink buffer of Boyden with the teachings of Dutta in order to provide a means for assembling encoded cell blocks for scheduling as spoken of on column 10, lines 52-55 of Boyden.

10. Claim **25** is rejected under 35 U.S.C. 103(a) as being unpatentable over Dutta (U.S. 5,982,761) in view of Boyden (U.S. 6,430,394) and in further view of Applicant's admitted prior art (background section of the specification).

Regarding claim **25**, Dutta in view of Boyden teaches the processing module of claim **22**. Dutta in view of Boyden does not explicitly teach a first header field including a hopping beam guard band. However, Applicant discloses on page 1, lines 16-20 that

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TDM frames generally include an overhead section that includes a guard band. At the time of the invention, it would have been obvious to someone skilled in the art to use a guard band with the teachings of Dutta in view of Boyden in order to regulate the beam hopping between geographic areas.

Allowable Subject Matter

11. Claims **18, 21, and 26** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim **18**, the prior art of record fails to teach where the first and second pseudorandom noise synchronization fields carry identical pseudorandom noise synchronization codes.

Regarding claim **21**, the prior art of record fails to teach the transmission of one of a frame payload power gate identifier and a frame power gate identifier.

Regarding claim **26**, the prior art of record fails to teach where the first and second header fields include identical pseudorandom noise synchronization codes.

Conclusion

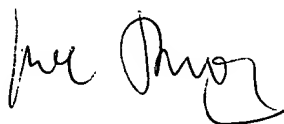
13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Christodoulides et al. (U.S. 2004/0114547), Wright et al. (U.S. 6,512,749), and Wilcoxson et al. (U.S. 6,516,438) are all references that contain material pertinent to this application.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Moore, Jr. whose telephone number is (571) 272-3168. The examiner can normally be reached on Monday-Friday (8:30am - 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema S. Rao can be reached at (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



FRANK DUONG
PRIMARY EXAMINER

Michael J. Moore, Jr.
Examiner
Art Unit 2666

mjm MM